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DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ

<u>L7</u>	abrasive coat\$5 and (diamond or diamond particles)and (binder or resin or polymer)and polyurethane [ti]	3	<u>L7</u>
<u>L6</u>	abrasive coat\$5 and (diamond or diamond particles)and (binder or resin or polymer) [ti]	34	<u>L6</u>
<u>L5</u>	color plus clear and abrasive coat\$5 and (diamond or diamond particles) [ti]	0	<u>L5</u>
<u>L4</u>	abrasive coat\$5 and (diamond or diamond particles) [ti]	54	<u>L4</u>
<u>L3</u>	coat\$5 and (diamond or diamond particles) [ti]	4723	<u>L3</u>
<u>L2</u>	coat\$5 and (diamond or diamond particles)	39978	<u>L2</u>
<u>L1</u>	diamond and 5611829 [pn]	1	<u>L1</u>

END OF SEARCH HISTORY

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was 0.711¢ and of coated cups was 0.896¢, which is 65% and 64% of the cost of coated and uncoated paper cups, respectively.

Example 37

Sheets were manufactured from a composition that was similar in every respect to the composition of Example 36, except that the amount of CaCO_3 was increased to 1500 g and the water increased to 8750 g. The resulting sheets had a density of 1.26 g/cm³. The unit cost of uncoated cups made from the sheets of this example was 0.688¢ and of coated cups was 0.873¢, which is 62% and 62% of the cost of coated and uncoated paper cups, respectively.

Example 38

Sheets were manufactured from a composition that was similar in every respect to the composition of Example 36, except that the amount of CaCO_3 was increased to 2000 g. The resulting sheets had a density of 1.29 g/cm³. The unit cost of uncoated cups made from the sheets of this example was 0.667¢ and of coated cups was 0.852¢, which is 61% and 60% of the cost of coated and uncoated paper cups, respectively.

Example 39

Sheets were manufactured from a composition that was similar in every respect to the composition of Example 36, except that the amount of CaCO_3 was increased to 3000 g, the Methocel 240 to 150 g, and the water increased to 9500 g. The resulting sheets had a density of 1.36 g/cm³. The unit cost of uncoated cups made from the sheets of this example was 0.680¢ and of coated cups was 0.866¢, which is 62% and 61% of the cost of coated and uncoated paper cups, respectively.

Example 40

Sheets were manufactured from a composition that was similar in every respect to the composition of Example 39, except that the amount of water was increased to 10 kg, which appeared to be optimum for the sheet-forming process.

Example 41

Sheets were manufactured from a composition that was similar in every respect to the composition of Example 36, except that the amount of CaCO_3 was increased to 3000 g, the Methocel 240 to 200 g, and the water increased to 10.5 kg. The resulting sheets had a density of 1.35 g/cm³. The unit cost of uncoated cups made from the sheets of this example was 0.732¢ and of coated cups was 0.917¢, which is 66% and 65% of the cost of coated and uncoated paper cups, respectively.

Example 42

Sheets were manufactured from a composition that was similar in every respect to the composition of Example 39, except that 200 g of glycerin was used and the amount of water in the molding composition was increased to 10 kg. The resulting sheets had a density of 1.34 g/cm³. The unit cost of uncoated cups made from the sheets of this example was 0.735¢ and of coated cups was 0.920¢, which is 67% and 65% of the cost of coated and uncoated paper cups, respectively.

Example 43

Sheets were manufactured from a composition that was similar in every respect to the composition of Example 39,

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except that 400 g of glycerin was used and the amount of water in the molding composition was increased to 10 kg. The resulting sheets had a density of 1.32 g/cm³. The unit cost of uncoated cups made from the sheets of this example was 0.787¢ and of coated cups was 0.927¢, which is 71% and 69% of the cost of coated and uncoated paper cups, respectively.

Example 44

Sheets were manufactured from a composition that was similar in every respect to the composition of Example 39, except that 600 g of glycerin was used and the amount of water in the molding composition was increased to 10 kg. The resulting sheets had a density of 1.30 g/cm³. The unit cost of uncoated cups made from the sheets of this example was 0.835¢ and of coated cups was 1.020¢, which is 76% and 72% of the cost of coated and uncoated paper cups, respectively.

Example 45

Sheets were manufactured according to the method of Example 9, except that the following composition containing 11 kg of water was used.

Component	Batch Wt. (g)	Dry Wt. %	Batch Vol. (cm ³)	Dry Vol. %
Fiber	2000	21.5%	1550	27.5%
Corn Starch	4000	43.0%	2759	49.0%
CaCO_3	3000	32.3%	1091	19.4%
Methocel 240	300	3.2%	229	4.1%
Sum	9300	100%	5629	100%

The resulting sheets had a density of 1.35 g/cm³. The unit cost of uncoated cups made from the sheets of this example was 0.832¢ and of coated cups was 1.017¢, which is 76% and 72% of the cost of coated and uncoated paper cups, respectively.

Example 46

Sheets were manufactured from a composition that was similar in every respect to the composition of Example 45, except that the amount of Methocel 240 was reduced to 250 g and the water reduced to 10 kg. The resulting sheets had a density of 1.35 g/cm³. The unit cost of uncoated cups made from the sheets of this example was 0.782¢ and of coated cups was 0.967¢, which is 71% and 69% of the cost of coated and uncoated paper cups, respectively.

In the following examples, very thin sheets are formed that have many characteristics and properties making them suitable for use much like paper, paperboard, plastic, polystyrene, or metal sheets of similar thickness and weight. The desired properties are designed into the sheets using a microstructural engineering approach. This allows for the manufacture of sheets having a variety of desirable properties, including properties not generally possible in mass-produced sheet-like objects presently manufactured from the foregoing conventional materials.

Examples 47-52

Sheets capable of being formed into a variety of articles (including food or beverage containers) are manufactured according to the processes described in Examples 1-46. The hardened sheets are finished, optionally coated, and then formed into a number of different food and beverage containers.

Search History

DATE: Thursday, May 08, 2003 [Printable Copy](#) [Create Case](#)

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	<i>DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>		
<u>L7</u>	(coating composit\$3 or coating) and (diamond or diamond particles)and (polyurethane or polyester or polyether or acrylic polymer)and (titanium carbide or boron carbide) and (crystalline silica or amorphous silica or precipitated silica) and (uncalcined alumina or calcined alumina)	3	<u>L7</u>
<u>L6</u>	(coating composit\$3 or coating) and (diamond or diamond particles)and (polyurethane or polyester or polyether or acrylic polymer)and (titanium carbide or boron carbide) and (crystalline silica or amorphous silica or precipitated silica)	79	<u>L6</u>
<u>L5</u>	(coating composit\$3 or coating) and (diamond or diamond particles)and (polyurethane or polyester or polyether or acrylic polymer)and (titanium carbide or boron carbide) and silica	671	<u>L5</u>
<u>L4</u>	(coating composit\$3 or coating) and (diamond or diamond particles)and (polyurethane or polyester or polyether or acrylic polymer)and (titanium carbide or boron carbide)	942	<u>L4</u>
<u>L3</u>	(coating composit\$3 or coating) and (diamond or diamond particles)and (polyurethane or polyester or polyether or acrylic polymer)	7822	<u>L3</u>
<u>L2</u>	(coating composit\$3 or coating) and (diamond or diamond particles)	30401	<u>L2</u>
<u>L1</u>	(coating composit\$3 or coating)	1238713	<u>L1</u>

END OF SEARCH HISTORY

well. The resin was then impregnated into a glass mat and allowed to stand at room temperature. The resin had thickened sufficiently in the two hours that it no longer would flow out of the mat when it was held vertically and flexed. No further thickening occurred after 48 hours and prepreg glass mat was still tacky and flexible.

If the impregnated mat was heated to 120° F. for 30 minutes instead of held at room temperature, the resin thickened and was totally satisfactory. No further change occurred on standing 48 hours.

B. 1 g. LF-168 (a modified MDI diisocyanate) was added to Derakane 411-45 and mixed well. The resin was then impregnated into a woven glass fabric and allowed to stand at room temperature. The same satisfactory result with respect to thickening as in Example A was obtained whether letting it stand for 2 hours or by heating for 30 minutes at 120° F.

C. 3 g. 1,6-hexanediisocyanate was added to 97 g. Silmar S4A (orthophthalate unsaturated polyester resin) and mixed well. The resin was then impregnated into a fiberglass mat and allowed to stand. After two hours at room temperature, the resin had thickened satisfactorily to prevent the flow of the resin out to the glass mat, yet remain tacky and flexible. The same result could be obtained by heating the freshly impregnated glass mat at 120° F. for 30 minutes.

What is claimed is:

1. A patch or repair assembly for quickly repairing vehicles, installations and parts which comprises:
 - at least one photocurable tacky and flexible prepreg non-woven fabric; or
 - at least one photocurable tacky and flexible prepreg woven fabric
 - a UV transparent release film on top of said prepreg fabric, and
 - a UV blocking film at least covering said UV transparent release film, said prepreg fabrics being impregnated with an acrylate novolac triepoxide having a functionality greater than 1.9.
2. The patch or repair assembly of claim 1 comprising a multiplicity of photocurable non-woven prepreg fabrics.
3. The patch or repair assembly of claim 2 wherein said prepreg fabrics are stitched to each other.

4. The patch or repair assembly of claim 1 wherein said at least one prepreg fabric comprises a transparent fiber selected from the group consisting of ceramic glass, quartz, polyamide, polybenzimidazole, polyethylene and an ionomer.

5. The patch or repair assembly of claim 1 wherein said UV transparent release film is polyvinyl alcohol.

6. The patch or resin assembly of claim 1 wherein said at least one prepreg fabric is impregnated with an acrylated novolac triepoxide with about 10% by weight of vinyl toluene and about 10% by weight of hydroxyl propyl acrylate or methacrylate.

7. The patch or resin assembly of claim 1 wherein said at least one prepreg fabric is impregnated with about 30 to 75% by weight of said photocurable resin.

8. The patch or resin assembly of claim 1 wherein said at least one prepreg fabric includes about 0.2 to 5% by weight of a thickening agent.

9. The patch or resin assembly of claim 8 wherein said thickening agent is a di- or polyisocyanate.

10. The patch or resin assembly of claim 9 wherein said thickening agent is 1,6-hexane diisocyanate.

11. The patch or resin assembly of claim 9 wherein said thickening agent contains reinforcing agents.

12. The patch or resin assembly of claim 1 wherein each of said prepreg fabrics contains a photoinitiator.

13. The patch or resin assembly of claim 12 wherein said photoinitiator is an acylphosphine oxide.

14. The patch or resin assembly of claim 1 including a UV transparent release film on the bottom of said at least one prepreg fabric.

15. The patch or resin assembly of claim 1 wherein said U.V. blocking film comprises a UV protective container enclosing said patch or resin assembly.

16. The patch or resin assembly of claim 1 including at least one transparent UV blocking film.

17. The patch or resin assembly of claim 1 including at least one heat activated prepreg fabric.

18. The patch or resin assembly of claim 1 comprising a layer of a non-woven fabric comprising fibers selected from the group consisting of thermoplastic ionomer fibers, polyethylene fibers and aromatic polyamide fibers, and said layer having an adhesive layer for placement against said vehicle, installation or part.

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L7: Entry 1 of 3

File: PGPB

Sep 26, 2002

PGPUB-DOCUMENT-NUMBER: 20020137872

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020137872 A1

TITLE: Coating compositions providing improved mar and scratch resistance and methods of using the same

PUBLICATION-DATE: September 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Schneider, John R.	Glenshaw	PA	US	
Ragan, Deirdre D.	Pittsburgh	PA	US	
Rechenberg, Karen S.	Gibsonia	PA	US	
Chasser, Anthony M.	Allison Park	PA	US	
Barkac, Karen A.	North Huntingdon	PA	US	

US-CL-CURRENT: 528/44; 528/272

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC
Draw Desc	Image										

☐ 2. Document ID: US 5645619 A

L7: Entry 2 of 3

File: USPT

Jul 8, 1997

US-PAT-NO: 5645619

DOCUMENT-IDENTIFIER: US 5645619 A

TITLE: Method of making alpha alumina-based abrasive grain containing silica and iron oxide

DATE-ISSUED: July 8, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Erickson, Dwight D.	Oakdale	MN		
Monroe, Larry D.	Eagan	MN		
Wood, Thomas E.	Stillwater	MN		
Wilson, David M.	Bloomington	MN		

US-CL-CURRENT: 51/309; 501/128, 501/153, 51/293

REPAIR COMPOSITIONS AND STRUCTURE

FIELD OF THE INVENTION

The present invention relates to a method, composition and structure for repairing vehicles, parts, installations, and the like. More particularly, the invention provides a means for quickly repairing or sealing vehicles, metallic surfaces, tanks, pipes and parts utilizing photocurable resins.

BACKGROUND OF THE INVENTION

A number of devices are known to plug apertures in tanks, pipes, automobiles, water-going vessels and the like. However, the prior art devices in many cases cannot be used in connection with hard to bond and complex surfaces.

A common practice of repairing holes in panels is to form a tapered recess in the composite material around the hole. Disk-shaped layers of structural fiber cloth of different diameters are set into the recess. The fibers of each layer are oriented at a different angle to the fibers of the adjoining layer. The layers are then secured in place by the use of high strength adhesive. A problem with these adhesives is that they require a long cure time. Also, this method of repair requires a highly trained technician and the repaired area relies totally on the adhesives to transfer the design load across the repair. A similar technique is disclosed by U.S. Pat. No. 4,544,036, granted Nov. 19, 1985, to Cosby M. Newsum. Other repair techniques, known in the patent literature are disclosed by U.S. Pat. No. 4,517,038, granted May 14, 1985 to Robert W. Miller, and U.S. Pat. No. 4,560,428, granted Dec. 24, 1985 to George O. Sherrick and Joseph R. Rosenthal.

U.S. Pat. No. 3,470,048 to Jones discloses a method of patching car bodies with an adhesive repair patch in combination with a plastic filler material containing a catalyst.

U.S. Pat. No. 4,486,254 to Zinimon discloses a heat activated patch or repair composition for metal objects. The patch or repair composition is heat activated by heating from the opposite surface to a temperature of from about 250° to 500° F.

U.S. Pat. No. 4,916,880 to Westerman discloses the combination of shaped inserts and adhesives for repairing a hole in a panel of composite materials.

European Patent Application No. 0,016,248 to Dainippon Ink & Chemical, discloses a process for producing prepreps which can be used in the present invention.

It is to be understood that the term "fabric" as used herein is intended to include a knitted cloth, for example, plain jersey knit, interlock, ribbed, cross float jersey knit or weft knit, and the like, or woven into a fabric, for example of plain weave, satin weave, twill weave, basket weave, and the like. The woven fabric may combine the various fibers of the present invention, the fabric may also be in the form of a non-woven material such as a mat, fluff or batting of fibers such as described above. The fabric may include a wool-like fluffy material produced from high modulus fibers. The substrate in the form of a batting or wool-like fluff may be prepared by conventional needle-punching means.

The term "installation" as used herein is meant to relate to machinery, building structures, tanks, and the like which are metallic or plastic.

The term "parts" includes the components of the installation or vehicles as well as tools.

The term "photocurable" includes means curable upon exposure to UV radiation as well as electron beam radiation.

SUMMARY OF THE INVENTION

In accordance with the invention there is provided a patch or repair assembly for repairing vehicles, installations, parts, and the like which comprises at least one photocurable prepreg fabric, a UV transparent release film on top of the prepreg fabric, and a UV blocking film at least covering the UV transparent release film.

Advantageously, the UV blocking film comprises a UV blocking pouch or container in which the patch is kept until it is ready for use. A second UV blocking film may be placed over the UV transparent release film for ease in handling and placing the patch before activation.

A multiplicity of photocurable prepreg fabrics can be utilized depending upon the type of repair required. At least one of the prepreg fabrics can be a heat curable prepreg fabric.

Depending upon the type of damage area, the assembly can be used in conjunction with a photocurable molding. Preferably, the molding contains a thickening agent and/or reinforcing materials.

In accordance with one embodiment of the invention there is provided a repair path system which can be utilized to repair tanks and similar containers which hold liquids and/or low pressure gases. The patch system utilizes a fiberglass fabric or mat which is impregnated with a photocurable unsaturated polyester, acrylic or vinyl ester resin. A light curable vinyl novolac resin is one of the preferred resins for forming the prepreg. The patch can be held in place with a plastic and/or metal fastener. Alternatively, the patch can be held in place by adhesive means. Also, when partially cured, the prepreg is sufficiently tacky to adhere to surfaces without adhesives.

In accordance with another embodiment of the invention there is provided a method of repairing vehicles, installations, parts and the like utilizing the assembly of the invention.

Advantageously, the method includes the step of filling a hole in a damaged surface with a photocurable molding prior to application of the assembly.

It is therefore an object of the invention to provide a photocurable patch or repair assembly which can repair damaged surfaces and parts.

It is a further object of the invention to provide a patch for repairing damaged vehicles or parts quickly and economically.

It is a yet still further object of the invention to provide a means for repairing damaged surfaces under a liquid.

It is yet another object of the invention to provide a method of repairing surfaces that can be performed quickly and economically.

Other objects and aspects of the invention will be more quickly understood and better described in view of the following specification taken in conjunction with the appended drawings, wherein:

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 shows a cross-sectional view of a patch of the invention in a protective pouch;

FIG. 2 is a cross-sectional side view of a multi-layer patch of the invention, and

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC
Draw Desc	Image										

☐ 3. Document ID: US 5611829 A

L7: Entry 3 of 3

File: USPT

Mar 18, 1997

US-PAT-NO: 5611829

DOCUMENT-IDENTIFIER: US 5611829 A

TITLE: Alpha alumina-based abrasive grain containing silica and iron oxide

DATE-ISSUED: March 18, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Monroe; Larry D.	Eagan	MN		
Wood; Thomas E.	Stillwater	MN		

US-CL-CURRENT: 51/309; 501/128, 501/153

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWC
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Term	Documents
COATING.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1175352
COATINGS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	244310
DIAMOND.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	109573
DIAMONDS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	11404
PARTICLES.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	821241
PARTICLE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	630458
POLYURETHANE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	238035
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POLYESTER.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	407146
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POLYETHER.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	93680
((COATING COMPOSIT\$3 OR COATING) AND (DIAMOND OR DIAMOND PARTICLES)AND (POLYURETHANE OR POLYESTER OR POLYETHER OR ACRYLIC POLYMER)AND (TITANIUM CARBIDE OR BORON CARBIDE) AND (CRYSTALLINE SILICA OR AMORPHOUS SILICA OR PRECIPITATED SILICA) AND (UNCALCINED ALUMINA OR CALCINED ALUMINA)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	3

FIG. 3 is a cross-sectional view of a metal part which is repaired with an assembly of the invention in combination with a filler molding.

Although specific terms are used in the following description for the sake of clarity, these terms are intended to refer only to the particular structure of the invention selected for illustration in the drawings and are not intended to define or limit the scope of the invention.

As seen in FIG. 1, the invention provides a basic patch 10 which can be used in repairing a damaged surface.

Patch 10 comprises a photocurable resin impregnated (prepreg) fabric 13 having a non-radiation blocking transparent film 12 covering the fabric 13 and an optional radiation blocking layer 11 over the film 12. The patch 10 is placed within a UV blocking container or pouch 14 to prevent curing of the prepreg fabric 13 prior to use. Optionally, the pouch 14 may have a separable layer 14' which peels away at the seams 15 so as to expose the bottom of the patch 10. The top portion of the pouch 14 can be used to cover the patch 10 upon activation of the photocurable resin and suppress any fumes, particularly styrenic fumes, from entering the atmosphere. Preferably, the top portion of the pouch has a removable UV blocking layer.

The patch 10 can be used by partially curing the bottom of the patch so that it becomes tacky and adheres to the surface being repaired. The radiation blocking layer 11, if present, is removed so as to expose the patch 10 to UV radiation for curing. The transparent layer 12 permits handling of the patch 10 so as to tightly press the patch 10 against the surface while curing.

FIG. 2 shows a multi-layered patch 19 containing a plurality of prepreg layers. The patch 19 is provided with a peelable top layer 20 comprising a radiation blocking or opaque sheet material. The radiation blocking sheet 20 may be embossed so as to be readily peelable. The film 21 may form part of a pouch enclosing the patch. Under the sheet 20 is a transparent film 21 which permits the passage of UV radiation. The sheet 20 covers a first prepreg fabric 22 comprising a photocurable resin impregnated fabric 22. Preferably, fabric 22 comprises a woven fabric. A further fabric layer 23 can comprise a photocurable prepreg fabric layer or a heat activated prepreg fabric layer. There is generally enough heat transmitted upon activation of the photocurable layer 22 to permit initiation of the cure of an adjacent prepreg layer.

The patch 19 can comprise one or more other photocurable prepreg fabric layers 24. The photocurable resin employed in the layers 24 can be similarly cured as fabric layer 22 depending upon the use of the patch and the time required before final cure is effected. The different prepreg layers can contain resins which are curable at different rates. The different prepreg layers can be used to provide different functions, such as, adhesion, stiffness, high impact, etc.

The bottom layer 25 need not be a prepreg layer. It can be used to form a base for the a patch to adhere. Layer 25 can contain a bottom layer 26 of a contact adhesive to effect initial bonding to the surface. However, if layer 25 is a prepreg layer, then the bottom layer 26 can either be an adhesive layer or a release film. The bottom layer 26 is preferably a pressure adhesive layer when the patch is used under water or under pressure to obtain rapid adhesion.

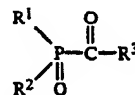
The patch 19 can be formed by separately applying each of the layers 22, 23, 24 and 25 that can be provided with the UV blocking layer 20 and a transparent layer 21. However, all of the layers may be placed on the damaged surface simultaneously. It has been found to be advantageous to bind layers 22, 23, 24 and 25 together, such as by needle punching, so as to more easily stack and align the layers upon use.

FIG. 3 illustrates a further embodiment of the invention where a metal surface 30 having a hole is first plugged with a molding 31 of photocurable resin. The molding 31 may contain reinforcing material and/or a thickening agent 32. The molding 31 is used to smooth out the hole before covering the damaged area with a patch 19 and curing the patch 19 with a source 33 of UV light.

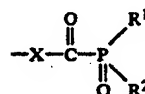
A preferred prepreg fabric of the invention can be formed by impregnating the fabric with a composition comprising a mixture of

- (a) one or more ethylenically unsaturated copolymerizable polyesters, vinyl or acrylic ester
- (b) one or more ethylenically unsaturated copolymerizable monomeric compounds,
- (c) an inhibitor and
- (d) a UV sensitizer,

with or without paraffins, thermally decomposable initiators, fillers, reinforcing agents, lubricants, inert solvents, shrinkage-reducing additives and/or other assistants usable in unsaturated polyesters. Advantageously, the UV sensitizer consists of one or more acylphosphine oxide compounds of the formula:



wherein R¹ is straight-chain or branched alkyl of 1 to 6 carbon atoms, cyclohexyl, cyclopentyl, aryl which is unsubstituted or substituted by halogen, alkyl or alkoxy, or a S-containing or N-containing five-membered or six-membered heterocyclic radical R² has one of the meanings of R¹ (but R¹ and R² may be identical or different), or is alkoxy of 1 to 6 carbon atoms, aryloxy or aralkoxy, or R¹ and R² together form a ring, and R³ is straight-chain or branched alkyl of 2 to 18 carbon atoms, a cycloaliphatic radical of 3 to 10 carbon atoms, phenyl, naphthyl or a S-, O- or N-containing five-membered or six-membered heterocyclic radical, and may contain additional substituents, or is the group



wherein R¹ and R² have the above meanings an X is phenylene or an aliphatic or cycloaliphatic divalent radical of 2 to 6 carbon atoms, and one or more of the radicals R¹ to R² may be olefinically unsaturated. Such UV sensitizers are disclosed in U.S. Pat. No. 4,265,723, which is herein incorporated by reference.

A particularly advantageous patch or repair assembly comprises

- at least one photocurable prepreg fabric,
- a UV transparent release film on both sides of the fabric; and;